

CLAIMS

1. A constant velocity universal joint (10) comprising a cylindrical outer member (12) which is
5 connected to one transmission shaft and which is provided with a plurality of guide grooves (18a, 18b, 18c) separated from each other by predetermined distances and extending in an axial direction on an inner circumferential surface, and an inner member (16) which is inserted into an open inner
10 space of said outer member (12) and which is connected to the other transmission shaft, said constant velocity universal joint (10) including:

a plurality of trunnions (26a, 26b, 26c) which are expanded toward said guide grooves (18a, 18b, 18c);

15 ring-shaped roller members (30) which contact said guide grooves (18a, 18b, 18c) and which are externally fitted to said trunnions (26a, 26b, 26c); and

a plurality of rolling members (28) which are interposed rollably between said trunnions (26a, 26b, 26c)
20 and said roller members (30),

wherein said plurality of rolling members (28) are retained by paste wax which is adhered to inner diameter portions of said roller members (30) when said plurality of rolling members (28) are installed to said inner diameter
25 portions of said roller members (30).

2. The constant velocity universal joint (10)

according to claim 1, wherein said inner diameter portion of said roller member (30) has an L-shaped cross section by an annular recess section (42) and a single flange section (40) which protrudes radially inwardly.

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3. The constant velocity universal joint (10) according to claim 2, wherein a holding member (43) is installed to said inner diameter portion of said roller member (30) having said L-shaped cross section.

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4. The constant velocity universal joint (10) according to claim 1, wherein each of said trunnions (26a, 26b, 26c) has a columnar section (44) having a constant outer diameter, and a diametrically expanded section (46) which is larger than said outer diameter of said columnar section (44); and

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a circumferential surface portion, which is disposed at a boundary between said columnar section (44) and said diametrically expanded section (46), has a radius of curvature which is larger than a one-tenth of an outer diameter of said columnar section (44).

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5. The constant velocity universal joint (10) according to claim 1, wherein an annular member (54), which surrounds a circumferential surface portion of said trunnion (26a, 26b, 26c), is installed to a base of said trunnion (26a, 26b, 26c).

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6. The constant velocity universal joint (10) according to claim 1, wherein said paste wax comprises an oil/fat component which has a consistency lower than that of a lubricating grease to be enclosed in said inner space portion of said outer member (12).

7. The constant velocity universal joint (10) according to claim 1, wherein a consistency of said paste wax, which is measured according to the Japanese Industrial Standard, is not less than 50 and less than 300.

8. A constant velocity universal joint (100) comprising a cylindrical outer member (12) which is connected to one transmission shaft and which is provided with a plurality of guide grooves (18a, 18b, 18c) separated from each other by predetermined distances and extending in an axial direction on an inner circumferential surface, and an inner member (16) which is inserted into an open inner space of said outer member (12) and which is connected to the other transmission shaft, said constant velocity universal joint (100) including:

a plurality of trunnions (26a, 26b, 26c) which are expanded toward said guide grooves (18a, 18b, 18c);

ring-shaped roller members (30) which contact said guide grooves (18a, 18b, 18c) and which are externally fitted to said trunnions (26a, 26b, 26c); and

a plurality of rolling members (28) which are

interposed rollably between said trunnions (26a, 26b, 26c) and said roller members (30),

wherein solid wax is melted and supplied in a liquid state to inner diameter portions of said roller members (30), and said plurality of rolling members (28) are retained on said inner diameter portions of said roller members (30) by said solid wax which is thereafter solidified.

9. The constant velocity universal joint (100) according to claim 8, wherein said inner diameter portion of said roller member (30) has an L-shaped cross section by an annular recess section (42) and a single flange section (40) which protrudes radially inwardly.

10. The constant velocity universal joint (100) according to claim 9, wherein a holding member (43) is installed to said inner diameter portion of said roller member (30) having said L-shaped cross section.

11. The constant velocity universal joint (100) according to claim 8, wherein said trunnion (26a, 26b, 26c) has a columnar section (44) which has a constant outer diameter, and a diametrically expanded section (46) which is larger than said outer diameter of said columnar section (44); and

a circumferential surface portion, which is disposed at

a boundary between said columnar section (44) and said diametrically expanded section (46), has a radius of curvature which is larger than a length of an outer diameter of said columnar section (44) multiplied by 0.1.

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12. The constant velocity universal joint (100) according to claim 8, wherein an annular member (54), which surrounds a circumferential surface portion of said trunnion (26a, 26b, 26c), is installed to a base of said trunnion (26a, 26b, 26c).

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13. A method of producing a constant velocity universal joint (10) comprising a cylindrical outer member (12) which is provided with a plurality of guide grooves (18a, 18b, 18c) separated from each other by predetermined distances and extending in an axial direction on an inner circumferential surface, a spider (24) which is provided in an open inner space of said outer member (12) and which is provided with a plurality of trunnions (26a, 26b, 26c) expanded toward said guide grooves (18a, 18b, 18c), and ring-shaped roller members (30) which contact said guide grooves (18a, 18b, 18c) and which are externally fitted to said trunnions (26a, 26b, 26c), said method of producing said constant velocity universal joint (10) comprising:

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supplying paste wax to an inner diameter portion of said roller member (30);

providing a plurality of rolling members (28) to said

inner diameter portion of said roller member (30) to retain said plurality of provided rolling members (28) on said roller member (30) by said paste wax; and

fitting said roller member (30) on which said rolling members (28) are retained to said trunnion (26a, 26b, 26c) of said spider (24).

14. A method of producing a constant velocity universal joint (10) comprising a cylindrical outer member (12) which is provided with a plurality of guide grooves (18a, 18b, 18c) separated from each other by predetermined distances and extending in an axial direction on an inner circumferential surface, a spider (24) which is provided in an open inner space of said outer member (12) and which is provided with a plurality of trunnions (26a, 26b, 26c) expanded toward said guide grooves (18a, 18b, 18c), and ring-shaped roller members (30) which contact said guide grooves (18a, 18b, 18c) and which are externally fitted to said trunnions (26a, 26b, 26c), said method of producing said constant velocity universal joint (10) comprising:

providing a plurality of rolling members (28) to said inner diameter portion of said roller member (30);

supplying paste wax to said inner diameter portion of said roller member (30) to retain said plurality of provided rolling members (28) on said roller member (30) by said paste wax; and

fitting said roller member (30) on which said rolling

members (28) are retained to said trunnion (26a, 26b, 26c) of said spider (24).

15. A method of producing a constant velocity
5 universal joint (100) comprising a cylindrical outer member (12) which is provided with a plurality of guide grooves (18a, 18b, 18c) separated from each other by predetermined distances and extending in an axial direction on an inner
10 circumferential surface, a spider (24) which is provided in an open inner space of said outer member (12) and which is provided with a plurality of trunnions (26a, 26b, 26c) expanded toward said guide grooves (18a, 18b, 18c), and
ring-shaped roller members (30) which contact said guide grooves (18a, 18b, 18c) and which are externally fitted to
15 said trunnions (26a, 26b, 26c), said method of producing said constant velocity universal joint (100) comprising:

a first step of providing a plurality of rolling members (28) to said inner diameter portion of said roller member (30);

20 a second step of fitting said roller member (30) provided with said rolling members (28) to said trunnion (26a, 26b, 26c) of said spider (24); and

a third step of engaging said roller member (30) with said guide groove (18a, 18b, 18c),

25 wherein a solid wax-retaining step is performed such that melted solid wax is supplied to said plurality of provided rolling members (28), and said solid wax is

solidified to retain said rolling members (28) on said roller member (30).

5 16. The method of producing said constant velocity universal joint (100) according to claim 15, further comprising a solid wax-removing step of melding and removing said solid wax solidified in said solid wax-retaining step.